

Appl. No. 10/693,173

Docket No.: 1232-5184

Reply to Office Action dated: August 23, 2005

**Listing Of Claims**

Claims 1 - 17 are pending in this application. Please cancel claims 1 and 5-7 without prejudice or disclaimer and amend claims 2 and 8. This listing of claims will replace all prior versions, and listings, of claims in the application.

**Claim 1 (canceled):**

**Claim 2 (currently amended):** ~~The optical interconnection device according to claim 1,~~ An optical interconnection device comprising an optical waveguide layer, wherein the waveguide layer is equipped with a plurality of electrodes which are independently drive-controllable such that a refractive index distribution is generated in the waveguide layer by drive control of the electrodes to control a propagation state of light in the waveguide layer, and an optical interconnection port is provided on an upper or lower surface or inside of the waveguide layer, and wherein the optical interconnection port is comprised of an optical element for receiving or emitting a light in a direction approximately perpendicular to a light-waveguiding surface and an optical path conversion means provided corresponding to the optical element at a given position in the waveguide layer.

**Claim 3 (original):** The optical interconnection device according to claim 2, wherein the optical path conversion means is a light reflector with a convex shape, and the optical element is a plurality of surface elements arranged around a top of the convex of the light reflector with their centers deviated from the top of the convex such that each optical element effects emission or reception only to and from a limited region within the waveguide layer.

**Claim 4 (original):** The optical interconnection device according to claim 2, wherein the optical element is a surface element comprised of a semiconductor crystal and has such a constitution that only a thin film layer necessary for receiving or emitting light of the

Appl. No. 10/693,173

Docket No.: 1232-5184

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semiconductor crystal is transferred to the waveguide layer and a semiconductor substrate is omitted.

**Claim 5 - 7 (canceled).**

**Claim 8 (currently amended):** A photoelectric mixedly mounted device comprising integrally:

the an optical interconnection device set forth in claim 1, comprising an optical waveguide layer that is equipped with a plurality of electrodes which are independently drive-controllable such that a refractive index distribution is generated in the waveguide layer by drive control of the electrodes to control a propagation state of light in the waveguide layer, and an optical interconnection port provided on an upper or lower surface or inside of the waveguide layer;

an electronic device connected to ~~an~~ the optical interconnection port provided in the optical interconnection device;

and an electric wiring layer.

**Claim 9 (original):** The photoelectric mixedly mounted device according to claim 8, having a package form equipped with a connection terminal for electric connection with the outside.

**Claim 10 (original):** The photoelectric mixedly mounted device according to claim 8, having a connection port for optical interconnection to the outside.

**Claim 11 (original):** The photoelectric mixedly mounted device according to claim 8, having such a configuration that a pattern of a manner of optical interconnection of the photoelectric mixedly mounted device is stored in a memory inside or outside of device, and the

Appl. No. 10/693,173

Docket No.: 1232-5184

Reply to Office Action dated: August 23, 2005

pattern is read from the memory in accordance with an instruction to change the optical interconnection to switch an operation of the device.

**Claim 12 (original):** The photoelectric mixedly mounted device according to claim 8, having such a configuration that a pattern of a manner of optical interconnection of the photoelectric mixedly mounted device is downloaded as a design asset from outside of the device and rewritten, and an operation of the device is switched on the downloading.

**Claim 13 (previously presented):** An electronic equipment comprising the photoelectric mixedly mounted device set forth in claim 8 to have such a configuration that connections between IC chips is freely reconfigured and a plurality of built-in systems are switched by one equipment.

**Claim 14 (previously presented):** An electronic equipment comprising the photoelectric mixedly mounted device set forth in claim 9 to have such a configuration that connections between IC chips is freely reconfigured and a plurality of built-in systems are switched by one equipment.

**Claim 15 (previously presented):** An electronic equipment comprising the photoelectric mixedly mounted device set forth in claim 10 to have such a configuration that connections between IC chips is freely reconfigured and a plurality of built-in systems are switched by one equipment.

**Claim 16 (previously presented):** An electronic equipment comprising the photoelectric mixedly mounted device set forth in claim 11 to have such a configuration that connections between IC chips is freely reconfigured and a plurality of built-in systems are switched by one equipment.

Appl. No. 10/693,173

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**Claim 17 (previously presented):** An electronic equipment comprising the photoelectric mixedly mounted device set forth in claim 12 to have such a configuration that connections between IC chips is freely reconfigured and a plurality of built-in systems are switched by one equipment.